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In Nos. 24, 25 and 26 **Mr. George M. Gould** treats of "**The Ethics of Economics**" rather as a quality absent from our economic system than as a living principle belonging to it. His doctrine is that all things produced by human labor represent the expenditure of human life, and that dollars and dimes, being representatives of wealth or earnings, are as drops of precious human blood. Therefore, in order to a rightful ownership of dollars, we must earn them; we must return to society a share of our own lives equal to the quantity we have received from our fellow men. According to Mr. Gould, whenever we eat or drink we partake of a solemn eucharist, where "the shadowy ghost of humanity calls out to us: 'Take, eat; this is my body. Drink ye all of this, my blood which is shed for many.'" This is not to be understood metaphorically, he says, but as "an exact statement of the fact."

While perhaps the theory of economics presented by Mr. Gould may not be scientifically true in all its parts, the moral he draws from the actual facts of our industrial system is true enough for warning and for guidance. The partnership of capital and labor is the panacea of Mr. Gould, the solution of the labor question. But from his ideal plans of industrial emancipation he excludes unpleasant facts. He allows only *profit*-sharing to come in, and *loss*-sharing is never taken into calculation. Yet it is the possibility of loss that has thus far defeated the "co-operation" experiment. It is doubtful if the operatives in any great factory would accept the whole plant as a gift, if compelled to take it on the terms by which its owners run it, the chances of profit and *loss*.

There is some extravagance in his language, but that is only a measure of his benevolent impatience at the inequalities and wrongs which refuse to be cured by his remedies. That the "ethics of economics" lies in the doctrine of "equivalence for service" is very likely true, but there is a difference of opinion as to the correct measure of that "equivalence," and a still greater dispute as to the means by which that measure shall be legalized and enforced.

E. P. POWELL.

The American scholar, **E. P. Powell**, gives his views on "**Language**" in Nos. 24 and 26. He maintains that language, as a means of communication, is possessed by all the animal creation, even down to the lowest in the scale of being; that all communicate with one another; that all of them have a language to express their wants and especially to express hunger. This lies at the root of the principle of evolution, because "organic development is necessitated in the direction of organic power to express—to speak."

W. D. GUNNING.

Mr. W. D. Gunning's essay *Katzenjammer*, in No. I, is a sprightly, half humorous, half serious lay sermon, sending shafts of light into the dark recesses of the mind. Katzenjammer is a German word, which means cat-sickness, and denotes a malady of body and mind which results from night-life. The owl, the night-hawk, the whip-poor-will and all the felines are night-prowlers. Men also have gone astray with the cats and become nocturnal; even Socrates, with all his virtues was somewhat addicted to Katzenjammer. Katzenjammer was a large factor in the decline of Athens and the chief factor in the fall of Rome. What a Katzenjammer's-band was that of Cataline! What Katzenjammer was that of Nero fiddling in the light of burning Rome! Struggle for life drove one member of a certain family higher into the air, and another into the ground. The sun-seeker gained in eye and brain, the earth-burrower lost its eyes and retained only brain enough to guide it through the ground. Such are the fates of the mole and the bat. Igdrasil the tree of life has been pushing its human fruit inward to the shade. We want a peripheral humanity lit by beams of science and sweetened and mellowed by active rays of the sun of righteousness.

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THE PSYCHIC LIFE OF MICRO-ORGANISMS.*

BY A. BINET.

Translated from the "Revue Philosophique" by μκρκ.

PART V.

III.

THE PSYCHOLOGY OF NUTRITION.

It will be necessary to go more into detail, in considering the psychology of nutrition.

The mode of nutrition among Micro-organisms is not uniform—a fact which ought not to appear remarkable when we bear in mind that this immense group is made up of all manner of heterogeneous beings that have nothing in common save the microscopic littleness of their bodies and the simplicity of their structure. Three main types of nutrition may be briefly distinguished.

1. *Vegetable nutrition*, or according to Bütschli's expression, *holophytic*. This is the method of nutrition among animal or vegetable cellules that contain chlorophyl and that nourish themselves by forming organic nutriment from ingredients taken from the surrounding medium. It is hardly necessary to call to mind that the function of chlorophyl is that of nutrition and not of respiration. This phenomenon was formerly termed the diurnal respiration of plants. The expression involves several mistakes. Enough to say that vegetables respire as animals do, by uniting with oxygen, and that that respiration continues the same both day and night. The function of chlorophyl is by no means respiration; its office is to decompose the carbonic acid gas of the air and to seize the carbon, which serves the plant in forming ternary or quaternary substances. This chemical work is performed by all chlorophyl organisms when influenced by the radiation of light.

Chlorophyl does not belong exclusively to the vegetable kingdom. A large number of animal Micro-organisms are colored green by this pigment; they are met with principally in the important group of Flagellates. Their assimilative organs, which are likewise found in all green plants, bear the name of chromatophores; they have lately formed the subject of interesting investigations.

The chromatophores are small bodies of protoplasm which are distinguished from protoplasm in general by their having assumed an individual structure. These little bodies, which in the vegetables are called *leucites*, have a granular and reticulate structure; they are impregnated with a coloring substance, at times green, at times yellow, and at times brown, as the case may be; in fact, several coloring substances are present, which, by intermixture in different proportions, form colors of many varieties. The best known, after green chlorophyl, is yellow chlorophyl or *diatomin*. The latter coloring substance can be absorbed by alcohol.

The Euglenoididæ, the Chlamydomonadidæ, and the Volvocinæ exhibit enormous chromatophores. In the case of the Euglenæ, the chromatophores are formed of small discoid plates; they are situated directly under the cuticle, so that the light can act upon them (see fig. 4 *). In certain species of Flagellata, they are exhibited under the cuticle in the form of two large plates which envelop the protoplasm like a cuirass formed of two pieces. The Chlamydomonadidæ and the Volvocinæ have green chromatophores, disc-shaped, and very small.

In the centre of the chromatophore a small bright space is observed which was formerly thought to be filled with chlorophyl; in reality, it is a minute solid globule which shows an extremely close analogy with the substance composing nuclei, or nuclein. It exhibits the same chemical reactions; it actively absorbs coloring matter and grows extremely brilliant when treated with acids. Schmitz gives this little body the name of pyrenoid (from πυρήν, nucleus). It is around the pyrenoid, and probably through its action, that starch forms; it is deposited in grains or re-unites in a ring about the pyrenoid, a fact easily ascertained by coloring them with iodine.

Production of starch has also been observed in the colorless Flagellates, as for instance in the *Polytoma uvella*. These latter do not have chromatophores, but Künstler, and after him Fisch, has noticed that every grain of starch is attached to a small mass of colorless protoplasm which is the focus of formation for the grains. This is precisely what happens in vegetable organisms where colorless starch-leucites are found. This little mass of protoplasm always faces the hilum of the starch-grain.

* Translation copyrighted.

* For figure 4, see No. 50, page 1139, of The Open Court.

As the function of the chromatophores is exercised only when subjected to the influence of light, it follows that green Micro-organisms must have light in order to nourish themselves.

A quite remarkable fact may be adduced in this connection. On examining the kingdom of Protozoans as a whole, it will be seen that a striking coincidence exists between the presence of the eye and the presence of the chlorophyl pigment. Organisms having an ocular spot are in most cases provided with the chlorophyl pigment, or, in other words, nourish themselves as plants do, by generating starch through the action of light. This fact proves that sensibility to light is in some manner dependent upon the chlorophyl function. If Flagellates possessing chromatophores, that is organs generating starch, have ocular spots at the same time, it is because these rudimentary eyes enable them to find their way towards the light, which is the necessary agent of chlorophyl action. Accordingly, all Micro-organisms having eyes nourish themselves as plants do. In their case, the object of the eye is to direct the performance of a vegetable function.

It is interesting to note in this connection that the Euglenæ might nourish themselves as animals do, for they have a mouth and a digestive apparatus. The buccal, or oral, aperture opens in the anterior end at the base of the flagellum, and is connected with a short gullet or esophagus (see fig. 6,* the mouth and gullet of an Euglena). Nevertheless, the Euglena is never seen using its mouth for swallowing alimentary particles. A quite curious problem is involved here. If it is true, as has been claimed, that it is the function that makes the organ, how do we explain the existence and especially the genesis of this digestive apparatus which performs *no* function?

It is the presence of chromatophores that prevents certain Flagellates from feeding like animals; so much so in fact, that the digestive apparatus performs its functions in Flagellates which have no chromatophores and are not provided with chlorophyl pigment, an instance of which is seen in the *Peranema*. The *Peranema* is, further, an exceedingly voracious animal. We must note also that the *Peranema* does not exhibit ocular spots like the green Euglena; and moreover, it has no need of such, since it does not have to seek the light to generate starch. All these phenomena are interdependent.

The influence exerted by light upon the green organisms of both kingdoms has been ascertained by different scientists. Light at a certain degree of intensity attracts them, and at a greater degree, repels them. Some years ago M. Strassburger conducted a series of connected experiments upon the movements of green spores towards light. It was observed, here, that the grains of pigment in the interior of the cellules, when under the influence of solar radiations, executed movements and set outwards in all directions.

2. *Nutrition by endosmosis*, or *saprophytic*. The organism nourishes itself by absorbing through the whole surface of its body liquids containing the products of vegetable or animal decomposition. Saprophytic beings are found in putrid waters or in infusions. This manner of nutrition may be considered, from the point of view which now engages us, as the most simple of all; it probably allows of a search for food, but it is certain that no movements are involved which are designed to draw the food into any possible digestive apparatus.

3. There is now a last mode of nutrition, of which we shall treat in minute detail; namely, *animal nutrition*, where the Micro-organism seizes solid alimentary particles and nourishes itself after the fashion of an animal, whether it be by means of a permanent mouth or by means of an adventitious one, improvised at the moment of need. This manner of nutrition is the process employed by higher animals. Among the lower organisms, it is met with in most of the Infusoria, in the Sarcodines, in many of the Mastigophores, and in others. Respecting the Micro-organisms belonging to the vegetable kingdom, we find nutrition by endosmosis and chlorophyl nutrition; the Protophytes never possess a mouth and never absorb solid foods.

Animal nutrition requires very remarkable psychological faculties in the organism practicing it. These manifestations of psychic life, the progressive complexity of which we intend to trace in starting from the simplest protozoic forms and arriving at the higher—prove that these animalcula are endowed with memory and volition. We shall group our remarks under the two following heads:

a. The choice of food; and

b. The movements necessary for the prehension of food.

The Micro-organisms do not nourish themselves indiscriminately, nor do they feed blindly upon every substance that chances in their way. Also, when they ingest food through some point or other of their bodies, they understand perfectly how to make a choice of the particles they wish to absorb. This choice is sometimes quite well defined, for there are species which feed exclusively upon particular foods. Thus, there are herbivorous Infusoria and carnivorous Infusoria. Among the herbivorous ones may be classed the chilodons which feed upon small Algæ, Diatomaceæ, and Oscillaria. The parmecia live principally upon Bacteria. The Leucophrys is a specimen of the carnivo-

* For figure 6, see No. 51, page 1151, of THE OPEN COURT.

rous class; it devours even the smaller animals of its own kind. The *Cyrtostomum leucas* eats everything, as do the Rotifers.

Though the fact of an exercise of choice in taking food is settled beyond question, yet the interpretation of this phenomenon is a matter of much uncertainty. Some writers, as Charlton Bastian for instance, explain this choice of food as an affinity of chemical composition existing between the organism and the nutriment. This idea does not lead to anything. Others compare the discrimination made by the Proto-organism between objects presented to it, to the action of a magnet which in some way selects particles of iron that have been mixed with particles of other substances. The latter interpretation is an evidence of the tendency evinced by some naturalists, of endeavoring to identify the attributes of living organic matter with the physico-chemical properties of the mineral kingdom.

In our opinion, the only question demanding consideration is whether the choice of food, in the case of Proto-organisms, does or does not result from a psychical operation, similar, for example, to that which takes place in higher organisms. We have received a noteworthy communication from M. E. Maupas, upon this subject, which tends to establish that the choice of food is not the result of individual taste in the Micro-organisms, but is determined by the organic structure of their buccal apparatus which does not allow them to receive other forms of nutriment.

We must closely examine, therefore, the mechanism for prehension of food.

The following is what occurs when the Amœba, in its rampant course, happens to meet a foreign body. In the first place, if the foreign particle is not a nutritive substance, if it be gravel for instance, the amœba does not ingest it; it thrusts it back with its pseudopodia. This little performance is very significant; for it proves, as we have already said, that this microscopic cellule in some manner or other knows how to choose and distinguish alimentary substances from inert particles of sand. If the foreign substance can serve as nutriment, the Amœba engulfs it by a very simple process. Under the influence of the irritation caused by the foreign particle, the soft and viscous protoplasm of the Amœba projects itself forwards and spreads about the alimentary particle somewhat as an ocean-wave curves and breaks upon the beach; to carry out the simile that so well represents the process, this wave of protoplasm retreats, carrying with it the foreign body which it has encompassed. It is in this manner that the food is enveloped and introduced into the protoplasm; there it is digested and assimilated, disappearing slowly.

There are cellules found in the inner intestinal walls of lower animals which effect the prehension of solid foods in the same manner as the Amœba cellule: they are called phagocytes.

This mode of prehension is beyond contradiction the most simple imaginable; for the prehensile organ is not as yet differentiated. Every part of the protoplasm may be made to serve as a digestive cavity in enveloping the foreign substance.

From the special standpoint of prehension of food, we may place the *Actinophrys sol* above the Amœba. This animalcule is a small microscopic Ileliozolarian abounding in fresh-water ooze. It casts out long, slender, filamentous pseudopodia from every part of its body. When its prey or any alimentary substance gets into the midst of this mass of filaments, the filament affected quickly draws back, carrying the nutritive matter with it towards the body proper of the Actinophrys. In other instances, the filaments, anastomosing themselves, form a sort of envelope about the prey. At the instant the substance comes within a short distance of the cellule, a part of the protoplasm composing the mass projects itself forwards, and encompasses the food, which is carried back and enveloped in the midst of the protoplasm by a process analogous to that seen in Amœba.

In the case of the Actinophrys any part of the body could serve as a way of entry for food, that is to say, could act the part of a mouth. To use the expression of W. Saville Kent, it is a *pantostomate* being. In other species of higher organization, this mode of alimentation is rendered impossible by the cutitcle which encompasses the body; the formation of a cuticle impervious to solid foods creates the necessity of a buccal orifice through which food may enter into the interior of the protoplasm.

A curious graduation in these phenomena is noticed here. Thus there are organisms destitute of a permanent and pre-existing mouth; their mouth is improvised as the occasion demands, is adventitions, so to say, and the reason that these organisms are ranked higher than the preceding ones, is that the mouth is invariably formed in the same place.

In this connection we may examine a small flagellate Infusory which abounds in impure waters, the *Monas vulgaris*. It carries a long flagellum attached to its anterior extremity, which when not in motion, is coiled up against the body. At the base of the flagellum the protoplasm projects a pellucid substance in the shape of a lip. This protuberance is hollow, containing a vacuole filled with liquid. Cienkotvski has described how these different organs act. The Bacteria and Micrococcus, which constitute the food of the *Monas*, are pulled into the latter's neighborhood by strokes of the flagellum; at that instant, the animal becomes conscious of the proximity of these other

bodies, for the protuberance which lies at the base of the flagellum extends towards the corpuscule, envelops it in its own substance, and pulls it back into the interior of the Monad's body. Bütschli has made an analogous observation with the *Oikomonas termo.*

The prehension of food comprehends, here, three phases, in two of which the organism manifests psychical activity: *first*, attraction of food by means of the flagellum; *second*, formation of the vesicle which extends towards and envelops the food, when the latter has come near; *third*, absorption of the food.

The Acinetæ are organisms that move about very little; they frequently remain fixed to a pedicle their whole life long. They have no cilia, but exhibit radiating prolongations, more or less numerous, and sparse or grouped in tufts, as the case may be. These filaments are suckers, provided at the end with a small air-hole. When a thoughtless Infusory swims into the territory of an Acineta, the latter arrests it by means of its stout filaments and fastens upon the former's body the cup-shaped extremities of its suckers, which make a vacuum. The protoplasm of the Ciliate thus captured, slips slowly through the suckers as through tubes, and is gathered together in the interior of the Acineta in the form of small drops. In the Acinetæ, accordingly, particular organs are adapted to the prehension and absorption of food. Corresponding to the greater complexity of physical action, the psychical process necessary for the act of prehension has likewise become more complicated than is the case with the Amœba. The Acineta is obliged to *direct* its sucker towards the Infusory which is within its reach, and consequently the animal is obliged to determine the position of its prey.

There are Acinetidæ that exhibit prehensile organs more perfect than those just noticed. Such are the *Hemiophrys*. They have both sucker tentacles and prehensile tentacles. The latter are filaments which the animal throws about its victim like a lasso, thus enveloping and rendering it motionless, while it proceeds to feed upon it by means of its suctorial apparatus.

Now, do these Acinetidæ show any preference of choice among the Infusoria that chance to fall within reach of their tentacles? M. Maupas, who has made an especial study of these organisms had at first admitted this preference in choice. But he afterwards rejected the notion. In 1885, he writes us: "I find quite another explanation of the impunity with which the *Coleps hirtus* can throw itself upon the terrible suckers of the *Podophrys fixa*. The stout shell with which this little Infusory is enveloped, serves it as a shield and guards it from the deadly grasp of the Acinetidæ. The Acinetidæ do not seize the Coleps because of any dislike of the latter, but because they are unable to seize them, and their inability results from the peculiar structure of the Coleps' tegumentary envelope. The Paramecia which also escape unscathed, are similarly provided with a tegument of high resisting power, which serves them as a protection in this contingency. The *Stylonichia histrio*, like all other Stylonichiæ, has a very soft tegumentary envelope. They are accordingly seized and devoured by the Acinetidæ without difficulty. The detailed knowledge of the differences of structure in the tegumentary envelopes has caused me to abandon the idea of a preference or dislike in the choice of those victims which serve as food for the Acinetidæ. Of the prey that passes by, they catch what they can and not what they want to."

In a large number of species the prehension of food is preceeded by another stage, the search for food, and in the case of living prey, by its capture. We shall not investigate these phenomena among all the Protozoa, but shall direct our attention especially to the ciliated Infusoria. Their habits are a remarkable study. If a drop of water containing Infusoria be placed under the microscope, organisms are seen swimming rapidly about and traversing the liquid medium in which they are in every direction. Their movements are not simple; the Infusory guides itself while swimming about; it avoids obstacles; often it undertakes to force them aside; its movements seem to be designed to effect an end, which in most instances is the search for food; it approaches certain particles suspended in the liquid, it feels them with its cilia, it goes away and returns, all the while describing a zigzag course similar to the paths of captive fish in aquariums; this latter comparison naturally occurs to to the mind. In short, the act of locomotion as seen in detached Infusoria, exhibits all the marks of voluntary movement.

It might also be mentioned that every species manifests its personality in its mode of locomotion. Thus, as a rule, the *Actinotricha saltans* when placed in a preparation where it finds itself at ease, remains for a few moments perfectly immovable. Then, of a sudden, it dashes forward with the rapidity of lightning and disappears from the field of vision. For a time it darts about to the right and to the left, and then once more assumes its state of immobility. It can move with the greatest agility through masses of *débris*, in the midst of which, bending and twisting, it slips about with wonderful nimbleness. The *Lagynus crassicolis*, on the other hand, moves along at a pace quite constant and uniform, neither slow nor rapid. It winds about among algæ and fragmentary particles, in search of its prey. The *Peritromus Emmæ* moves slowly. It runs lazily over the Algæ, where it seeks

its nutriment, and does not stray from them to venture into the open water.

(To be continued.)

DRUMMOND'S NATURAL LAW IN THE SPIRITUAL WORLD.

BY JAMES HERBIN.

This book has created a sensation in certain orthodox circles, and gained quite a popularity, because, when superficially considered, it has the appearance of substantiating certain Christian dogmas by scientific analogies.

There is enough philosophy and science in it to confuse the many readers; and by people with an orthodox bias, it is pointed to with pride and triumph, as unquestionably settling vexed questions about which scholars have expended a great amount of thought. People who are not familiar with the writings of Herbert Spencer, Tyndall, Huxley and Darwin, would be apt to be misled about opinions held and unqualifiedly expressed by these eminent authors. Drummond is imbued with sufficient science and metaphysical philosophy to carry him dangerously near the point of forsaking the whole orthodox structure; and he will have to stop where he now is and allow his iron-clad dogmas to keep a firm hold on his mind, or the result will be disastrous to his orthodox notions.

The Platonic thought that "Ideas are the only true existences," and the teachings of Fichte and Schopenhauer, that matter is an illusion or only a state of consciousness; that all objects of which we can form any conception are not real, but exist only for the subject, and in the subject, cannot be indulged in and endorsed by any one who believes and teaches a literal sacrifice, and that immortal life is only possible because of that act.

These statements are found on the last page of the introduction, which the author did well to advise the general reader to avoid.

In the fore part of the introduction he asserts that Theology was imperfect when it was formed, and that "it must pass through the necessary stages of progress, like any other science." Of course, if it was perfect at its formation, it could not progress; but it is difficult to understand how a system that sacrificed the only Son of the Most High, to save a dying world, and under the direct supervision and sanction of God Himself, could be so imperfectly constructed as to need to progress like a science.

On page 39 he asks: "What, then, has Science done to make Theology tremble?" The Science of Bruno made Theology tremble, and Theology burned Bruno at the stake. The Science of Copernicus and Galileo made Theology tremble, and it suppressed the one and put the other to the tortures of the Inquisition, to sustain its untenable position, which the light of advancing knowledge forced it finally to abandon. The Theology of ancient Greece trembled at the light that shone from Socrates, and Theology made him drink hemlock. History is full of examples. How can any one, in the light of the knowledge of the Nineteenth Century, ask such a question?

Page 40. Then the inspiration of Revelation was left obscure, and it did wander benighted down through the Dark Ages, causing persecution, bigotry, human suffering, fierce wars of extermination, bloodshed and cruelty, and it is only within the last two hundred years that the light of Science has come in to correct these terrible errors, and set Theology right, which it has not yet succeeded in doing.

Drummond in his Biogenesis claims to substantiate the theological dogma of regeneration by an analogy in biology.

Regeneration, according to Drummond (and probably orthodoxy would accept his definition if its conclusions were not pressed home too strongly), means that only through Christ can human beings attain to immortality. He claims, and fairly, that the foundation of the whole Christian church, Catholic and Protestant, and all of the various sects comprising these two denominations, rests upon this dogma as their corner-stone; and if it were removed, the whole fabric would fall into ruin. The whole matter is stated in one terse sentence: "Except a man be born of water and of the Spirit he cannot enter the kingdom of God."

There is no mistaking the meaning of that sentence. Unless you are regenerated, and in a certain way, you can have no claim upon, and can never expect to attain to, eternal life. No matter how good you are; no matter how spiritually minded you may be, or how self-sacrificing, pure, charitable and forgiving a life you may lead, it is absolutely and unconditionally necessary that you be regenerated, or you will be eternally punished. That can hardly follow, either, according to Drummond, for annihilation is a necessary corollary of his ideas.

Not taking evolution into account, but accepting literally the Mosaic statement that the earth has endured only six thousand years, how many untold millions of wretched human beings have been swept off into annihilation or everlasting torment. The author admits that hitherto there has been no reason for believing that uncomfortable doctrine excepting that the Scripture says so. He admits that the want of any rational defense of the doctrine has been keenly felt, and that they have been obliged, heretofore, to rely on the *ipse dixit* of Revelation. "Man has, or may have," says Drummond, "two lives; a natural life and a spiritual life." "The natural life is the existence that all organized beings or things possess on earth. It comes from the ancestors of the living organism, they may transmit to their offspring; but the life of the individual organism dies when the corporeal structure is finally disintegrated." The spir-

itual life is a direct gift of God, and is only obtained by acquiring a certain mental state and performing certain material conditions.

"If you believe certain dogmas, and perform certain rites, a new life, which is permanent and never-ending, will be given you, and you will dwell in Paradise with the sons of God forever."

To prove this by scientific analogy he makes the following statement: "There is no spontaneous generation of life. The passage from the mineral world to the plant or animal world is hermetically sealed on the mineral side. No mineral structures can lift themselves up by any inherent power of their own and become organic. The power of the analogy for which we are laying the foundations to seize and impress the mind, depends on the vividness with which one realizes the gulf which nature places between the living and the dead." And, he says, "there is also such a barrier in the spiritual spheres." "The passage from the natural world to the spiritual world," or from natural life to spiritual life, "is hermetically sealed on the natural side. The door from the inorganic to the organic is shut, no mineral can open it; the door from the natural to the spiritual is shut, and no man can open it." Now, so far as his spiritual world is concerned, that being the creature of his own imagination, or the offspring of his dogmas, he can erect as many barriers as he pleases, consistent with his theology; but his barriers between the organic and inorganic kingdoms are as baseless as the fabric of a vision, and have no foundation in science. He admits that his theology is imperfect. The position that he must occupy is this: When inorganic substances become organized, when they become integral parts of organized bodies, they are alive; they are changed by the life forces that govern them, and become themselves living structures. In reality, matter is never alive; it is always dead, and always will be; it needs no barriers, natural nor artificial, to keep it in that state. This is another natural law with which Drummond has not become acquainted.

The chemical composition of bioplasm is more complex than any inorganic substance, but bioplasm is still a compound of molecules of oxygen, hydrogen, nitrogen and carbon. The formation of the molecules into a complex compound does not endow one molecule with life; and one molecule represents the entire mass of the structure. The life forces build up and organize the inert atoms, use them for their own purposes as they need them; they come into the organism inert atoms only as they are acted upon, and they are pushed out of the organism the same inert atoms that they were when taken in. Matter will never know that it is "touched," neither before nor after "bioplasm has done its gracious work." It being compelled by life forces to serve them, does not change it nor give it consciousness. When my friend takes crystals of chloride of sodium with his dinner, and it helps build up his corporeal structures, it may be allowed by his life forces to remain chloride of sodium, or it may be decomposed into atoms of the original elements, chlorine and sodium, of which it is formed, undergo a hundred transformations, difficult to trace, and then, in a few hours or days, as is always the case, be thrown off from the body, never for a moment having possessed consciousness nor vitality, but having been used by both.

What a complicated and wonderful structure is the human form! When controlled by life it is certainly "noble in reason, infinite in faculties, and God-like in its attributes;" but in a moment all these qualities disappear, and there lies your dead matter, the atoms of which are just as much alive now as they were when it was bearing itself aloft in the grandeur of its beauty and its activity. The molecules of iron that help to form its structure, are the same now as they were when the blood was pulsating under the temples, and the same as they will be next week when they help to form a bit of rusty scrap-iron. The molecules of oxygen are as when they were helping the expressive eye to cast bright and meaning glances, or as they will be when they have floated off, and are combining with hydrogen and carbon, in one of a thousand lights which helps to illuminate a palace.

The molecules of dead matter which to-day form our bodies, were, last summer, helping to form the waving grain on the hillside, and becoming integral parts of the green and tender herbage that was cropped by the oxen there grazing, and which have since through the channels of the mills and butcher shops, been placed on our tables to serve for dinners, and when eaten, to supply the place of other molecules which are being constantly thrown off from the system through destructive metamorphosis.

And every molecule of the elementary substances of which our bodies are formed to-day, will next summer again be undergoing the same transformations. And every one of these molecules belongs to the inorganic kingdom. How foolish to talk about barriers and analogies when every molecule in the domain of nature belongs to the organic to-day, and to the inorganic to-morrow. Advancing science has formulated with great distinctness what constitutes matter. The division of matter into organic and inorganic is arbitrary and unscientific, because it changes from one form to the other so quickly and easily that no barriers can keep them apart. The molecules of oxygen floating around me as I write, are inorganic. The burning lamp-flame catches some of them, and, quicker than the conjurer's magic transforms them into carbonic acid or water, as they happen to unite with the carbon or hydrogen that constitutes the vapor of the oil, and they are inorganic still. I inflate my lungs at the same moment,—catching some of the same crowd, and as quickly as in the other case, they are integral parts of my blood

globules, and are coursing in red life currents through my arteries, and belong to the organic kingdom. All matter is constantly in motion, and is as changing in its restless activity as the surface of the sea. Science, through chemistry, has enumerated all the elementary substances, marked out their combining power with one another, and tells us how, in measured numbers, every compound in nature is formed. We also have a very comprehensive idea of the forces of nature and the laws that govern those forces. One serious blunder that Drummond has made, is in confounding the laws and forces with one another.

The physical forces, motion, heat, light, electricity, chemical affinity, gravitation, vitality, etc., work in a regular and orderly way; the way in which they work comprises their laws. Gravitation is not a law, but a force. These forces act upon matter according to laws. The lower and more stable aggregations of molecules which constitute a double salt, are built up in just the same way in which the higher and less stable aggregations of molecules which constitute protoplasm, are built up. It is a commonplace of science that the physical forces are transformable into each other, and it is held by high authority that they are transformable into sensation, emotion and thought. That they are transformable into each other is an accepted fact, and that in the building up of highly complex organized structures some of the other forces are transformed into vitality is beyond question. How this is done is still a profound mystery, but no more profound a mystery than how aërial vibrations generate the sensation we call sound; or than, how gravitation holds the planets in their evenly balanced orbits around the sun.

RELIGION AND SCIENCE.

A Résumé.

For the benefit of a correspondent who is interested in the Theophilus discussion and has not seen the back numbers of THE OPEN COURT, we propose the following explanations and definitions:

The subjective basis of cognition is the sensation of the subject; while the objective basis is the existence or rather manifestation of Reality.

Truth is the conformity of cognition with reality, *i. e.*, of our concepts with the things represented in our concepts.

Truth being a relation between subject and object appears to be relative in its nature. Absolute truth is a *contradictio in adjecto;* it would imply cognition without a cognizing subject. At the same time it is obvious that an absolutely Unknowable is impossible; it would imply the existence of an object whose existence is not manifested, *i. e.*, an object without reality.

Science is the search for truth.

The method of science is the economy of thought.—*Mach.*

Knowledge is the possession of certain truths.

Knowledge is, so to say, the present stock or capital with which Science works. Science cannot exist without Knowledge. The object of Science is not only to increase and enlarge Knowledge bu also to purify the present stock of Knowledge from vagueness, errors, and misconceptions. Accordingly, Science may exist and has existed with little Knowledge; and much Knowledge can be found in many minds where Science is wanting.

Religion is man's aspiration to be in unison with the All.

The basis of all morality is religious. A moral educator or preacher may justly be asked, "On what authority dost thou justify thy precepts?" And he will tell us that his authority is not personal; he speaks in the name of universal order. Accordingly his authority is that of religion. If it were not so, all his good precepts would have no foundation; they would hover in the air like beautiful dreams that have no reality.

Morals is man's conduct in so far as it is in unison with the All.

Ethics is the Science of Morals which teaches man why he must, and how he can, regulate his conduct so as to be in unison with the All.

Religion has been defined differently in the columns of THE OPEN COURT, but all definitions that have been presented in editorial articles are in strict agreement. Mr. Hegeler defines Religion as "man's union with the All" (taking the definition from the Lutheran Catechism "Religion ist der Bund des Menschen mit Gott durch Gott," and replacing the Word GOD by the more comprehensive word THE ALL.) The editor has defined Religion as "man's consciousness of his relation to the All", (No. 24); as "Das Allgefühl im Einzelnen," the All-feeling in the Individual, (see footnote page 965); as "man's conception of the world that serves him as a guiding-star through life," (page 1180). Monism has been explained as the recognition of the Oneness of All-existence; Religion, it is stated teaches that the individual is a part of the whole and has as such to conform to the cosmical laws of the All.

Religion (man's aspiration to be in unison with the All) has naturally produced many superstitious notions of the world, of its origin, and of its purpose. Similarly science (man's search for truth) has produced many errors or false notions of reality. But all the superstitions of religion do not prove that religion as such is an illusion and all the errors of science are no evidence that science as such is a sham. It is obvious that religion and science, as defined by THE OPEN COURT, complement each other. If religion and science do not agree, it is a certain sign that our conception of either the one or the other is wrong. The history of the human mind has been a constant conflict and reconciliation between religion and science. Their relation has repeatedly been disturbed and re-adjusted.

Monism affords a basis for their unison and opens a new vista of progress for both. [EDITOR.]

SONNET.

BY LOUIS BELROSE, JR.

Full often, when my way is long and lies
Through busy streets in which the dazzling light
Gleams from a thousand lamps until my sight
Is all bedimmed, I raise my weary eyes
Above and rest them on the tranquil skies:
Rest them from little flames that flare and smite
By gazing where the myriad suns of night
Shine with a glow that calms and beautifies.
Thus when the sounds of pain and strife and hate
Assail mine ears and grieve and torture me,
Leaving me, sick of life, to curse at fate,
I raise my thoughts to regions that are free
From earthly cares, and there I contemplate
The silent working of Immensity.

THE SOURCE OF POVERTY.

A REPLY BY WHEELBARROW TO MR. SOLOMON LEVI'S CRITICISM.

To the Editor of THE OPEN COURT:—

Thanks for allowing me to answer Mr. Levi's criticism. I like to meet a critic who frankly confesses that he comprehends the subject and that I do not. From such a critic I always expect instruction, and seldom get it.

Is Mr. Levi perfectly sure that he "comprehends" the case? His illustrations indicate that he does not. True, a physician finding his patient suffering from headache, indigestion, pains in the side, and cold feet, might wisely say, "These are not four diseases, but four symptoms of one disease," and on that theory he might properly prescribe a single remedy; but suppose four patients afflicted with different disorders, will he treat them all alike? This is more nearly like the case about which we are now holding a consultation, and Mr. Levi's instance does not fit. Society is composed of many persons, some of them healthy and some not. The sick patients have all sorts of disorders, and the cures must be as various as the causes of disease.

"Poverty," says Mr. Levi, "is the real disease"; and he would abolish it by levying a single tax on land. He can as easily remove it with a crowbar. Whatever poverty results from land monopoly will vanish when that monopoly shall cease to be; but the poverty caused by the land system is only a small portion of the aggregate wants and deprivations which go by the name of poverty. Poverty is a consequence, like sorrow, and like sorrow it comes from a thousand springs. The college of physicians was once confounded by a wise man who advised the faculty to abolish "sickness," instead of attacking diphtheria, measles, and fever. "Remove sickness, gentlemen!" he said, "and all the diseases will disappear."

A good many years ago, I lived on the western "frontier." Jerry Dodd was the only doctor in our village, and even he graduated in the blacksmith shop, where he picked up his medical education by physicking horses Jerry had one infallible remedy for all diseases, from typhoid fever down to corns and bunions. He called it "lobeely." It was the only medicine I ever took that would produce sea-sickness on land. No matter what ailed us, he always prescribed "lobeely." I once had a painful felon on my thumb, and Jerry made me take a stiff dose of lobeely, to remove, he said, "the poverty of the blood." So I am continually meeting with Jerry Dodds, who have a specific for the cure of all social and political ailments, a dose of "lobeely" to remove all the poverty of the people.

I can hardly be civil to the doctrine that sobriety and economy reduce wages; but as I used to believe it myself, I will treat it courteously. Will Mr. Levi give us one instance in the United States where sobriety and economy had any such effect? When the temperance movement was spreading among the workingmen of England, the brewers and publicans used to employ talkers to go among us and explain that the whole scheme was gotten up by the masters to lower wages, and that whenever it should become evident that we could do without beer, the value of the beer we used to drink would be deducted from our wages. I believed all that for a long time, but at last I noticed that when a man got his wages raised, or was promoted, he was in almost every case a teetotaler. As soon as my eyes were directed towards the actual facts, I saw in a moment that not only was the doctrine false, but that the reverse of it was true. It is amazing that this mischievous error should be revived in the United States!

When and where did Col. Ingersoll say that "the bankbook of a mechanic is a certificate that wages are too high?" Col. Ingersoll has said many eloquently foolish things, but I do not believe he ever said anything so foolish as that. There must be a mistake about the quotation. As to the kindred sentiment, that "It is not men we must try to improve; it is the conditions that make men what they are that must be altered," I repeat that it has been for ages an obstacle to the progress of mankind. It gives us a cowardly excuse for laziness. It enables us to shift our vices and mistakes from ourselves to our "conditions." It encourages us to shirk our duty, and to desert the moral work set out for us to do. We *must* try to improve men and their conditions too. The former is the more important action, because improved men will improve conditions long before improved conditions will improve men. I do not think it well to place these two reforms in opposition to each other or in contrast. They should march along step by step together, like two soldiers of the same file.

"A certain man went down from Jerusalem to Jericho, and fell among thieves, which stripped him of his raiment, and wounded him, and departed, leaving him half dead." A priest and a Levite came along, both of them wholesale reformers, and they said, "To help this man would be beneath our dignity; we are not in the retail business. Let us alter the 'conditions' that produce thieves, and highway robbery will cease." Then came a Samaritan and said, "I will gladly assist you to reform society by wholesale, but while we are doing it, I do not think it beneath me to do good in a retail way." So he went to the injured man, "and bound up his wounds, pouring in oil and wine; and set him on his own beast, and brought him to an inn, and took care of him." The moral of this is, work for the removal of suffering wherever you find it. There are many wrongs in our social and political systems, each one producing its own share of poverty. By removing each separate wrong we remove its quota of evil; and the man who thinks he has some stuff in a bottle that will cure everything, is enthusiastically wrong. It is a mistake that a single tax on land will remove the poverty caused by drunkenness, idleness, rheumatism, or falling among thieves. The man who will do nothing to remove our social evils, but levy a single tax on land, simply leaves the victim of injustice to die on the Jericho road.

I have no excuses to offer for the wickedness of the "Coal Barons," who lock up nature's coal cellars and turn the miners out. If I had my way there would not be any coal barons, nor any other "barons" for that matter; but without any further dwelling upon that, I proceed to answer Mr. Levi's question concerning the locked out miners. "Does not Wheelbarrow see that the strictest economy, the temperance of a St. John can be of no avail to those unfortunate men?" Well, no, I do not see any such thing. It appears to me that under the circumstances temperance and economy must be of great avail. It is easy to say that they have been deprived of "the right to the use of the earth," and I rather think myself that they ought to have the coal mines; at least I wish they had them, but would they not be coal barons then? And suppose I should go there with my shovel, pickaxe, and wheelbarrow, and begin digging coal for a living, how long would it take them to fire me out of the mine? And if I should tell them that I had a "right to the use of the earth," they would say, "Yes, but not to that part of the earth which your neighbor has a right to the use of." And how could I answer that? Phil. Fogarty, an Irish friend of mine, was president of the land league, and one day he told me that he had hired a man to kill landlords.

"What do you pay him for the job?"

"I give him a hundred and sixty acres of land for every landlord he kills."

"What if he kill ten landlords?"

"Then he will get sixteen hundred acres of land."

"Why, that will make him a landlord; will it not?"

"Yes, but I have a man ready to kill him then."

While Mr. Levi is abolishing the "conditions" which produce "coal barons," let him be careful that he substitute not some new "conditions" that will create new "barons."

All poverty will not be removed by sobriety and thrift, but

they will abolish that part of it which has been caused by improvidence and drink. I think these propositions are self-evident, yet Mr. Levi thinks the result of them would be to reduce us "to a mere animal existence." The man who believes that self-discipline, industry, economy, temperance, will reduce those who practice them to "a mere animal existence" probably attaches no definite meaning to such phrases as, "It is not restriction, it is freedom that labor needs?" "Throw open natural opportunities." "Put all men on equal footing in regard to natural bounties by taxing to the fullest extent and for the benefit of the whole community that fund which has been created by the whole community." And so on for several columns. May I ask, "What fund? and why tax it at all? How can taxing a fund created by the whole community be for the benefit of the whole community? All that magniloquence reminds us of the "red-faced man" described by Dickens, who used to stun the company with gong-phrases that might mean anything or nothing. "What's freedom?" said the red-faced man, "Not a standing army. What's a standing army? Not freedom. What's general happiness? Not universal misery. Liberty aint the window tax, is it? Society is bending beneath the yoke of an insolent and factious oligarchy; bowed down by the domination of cruel laws; groaning beneath tyranny and oppression on every hand, at every side, and in every corner."

The man who thinks that there is a "sole cause" for all the poverty, vice, misery, errors and mistakes that abound in society, may call himself an "economist," and a "student of natural law," but he has not been much of a "student" if he has not learned that poverty occasioned by drunkenness, gambling, or even by business imprudence, is not to be removed by levying a tax on land. It is quite in harmony with "natural law" that such an "economist" should hug the delusion that "nothing short of rebuilding our whole social structure will be of any real or lasting benefit to the masses." Why so? Is there any need for such a wholesale change? "Nothing will ever cure that smoky chimney," said the old lady, "except rebuilding the whole house." She had studied just enough "natural law" not to know that rebuilding the chimney might answer every purpose. The rebuilding of "our whole social structure" would be the most tremendous feat of engineering ever done by mortal man since he attempted to scale heaven from the tall towers of Babel; yet there are architects in every town who can furnish in a moment's notice the plans and specifications by which the rebuilding may be easily and successfully done. And the world is distracted by their confusion of tongues.

Familiar and friendly as the clown in the circus, our old acquaintance the "iron law of wages" steps into the arena and says, "Here we are again." Close behind him follows the ancient antithesis known as "the millionaire and tramp, the one the complement of the other." Those veteran bits of rhetoric have done good service; they have earned retirement and a pension. Let them go. The tramp is not the complement of the millionaire nor the millionaire of the tramp. They are distinct social phenomena, the one independent of the other, the tramp a little more independent sometimes than the millionaire. There is a good deal of maudlin sorrow and stumpy pathos wasted upon one specimen of the tramp, and much undeserved reproach upon the other. Rarely is the tramp a sign of want, or even of a scarcity of work. As a picturesque victim of social oppression he is a healthy, rollicking fraud. The stout young fellow who goes on tramp for the gypsy fun of it, and because he would rather beg than work is a despicable creature who ought to be kept on the stone pile; but the laborer who prefers to walk from one part of the country to another, rather than ride, may be as respectable as the man in the palace-car. Neither the one tramp nor the other is chargeable to the millionaire. In this country the tramp is not the product of poverty but of riches. It is not scarcity but abundance that causes the tramp to blossom in the United States. The fact that a man can get "a meal's vittles" for nothing, almost anywhere in America has developed that contemptible jolly mendicant known as the tramp. As a political argument he is an impostor.

It seems to me that the "student of natural law" utters a contradiction when he says in one paragraph that the millionaire and the tramp "are but creatures of the same natural forces;" and then tells us in another paragraph that "nature is not concerned with the making of millionaires and paupers anymore than with the making of Jews and Catholics." I think they are all the products of artificial forces; although, as to the tramp, nature has had a good deal to do with producing him. Any man who has had much acquaintance with nature in the woods and fields knows the artful way by which she seduces boys from the schoolhouse and men from the shop. The man who has never been a tramp; I don't mean a mendicant, but the tramp who pays his way; the man who has never been a tramp knows not what luxury is. He has never quaffed the wine of life from the chalice of the Gods. He has never felt the holy spirit pouring down upon him from the sun. Health glows in the brown face of the tramp, and nature makes for him a pic-nic and a holiday. Do you like pictures? Tramp through Old England in the spring, or New England in the fall, and roll past you with your own feet a landscape of 20, 30, 40 miles a day. How the glories of the Louvre and the Vatican pale before the groupings and the colorings you will see. In his gilt-edged poetry the millionaire reads about "the music of the spheres," but the tramp actually hears it in that symphony of praise wherein all the harmonies of nature sing together. He drinks a gallon of air at a draught, and consumption and dyspepsia know him not. A pleasant stroll that I can recommend for anybody needing a tonic is a twenty mile-a-day walk across the "pleasant land of France," say from Dieppe, straight away to Strasburg. Let us not waste any more tears on the tramp, nor any more cant.

And this reminds me of "The iron law of wages," which has been imported into this debate. It gives to the argument a learned look, as cap and gown give an air of scholarship to an Oxford student. "The iron law of wages" is an old myth which used to vex and puzzle me, but like some other ghosts it fled when I challenged it. I then discovered that it was unreal, like "The stuff that dreams are made of." It has no more substance than the wooden rule of three, or the leather law of interest. If a figure of speech is needed let us call the law of wages india-rubber, which it resembles. It is elastic; it swells and shrinks, and stretches and bends according to the pressure and resistance of the time. It changes according to the "conditions." Time, place, and circumstance; crops, climate, capital; product, strength, skill, character, and a thousand other forces control and modify the law of wages, if there is any law of wages other than the law of price for groceries, the law of getting the most sugar and the most labor for the least money?

I once held the position of deputy bricklayer. I carried the bricks up in a hod, while my principal set them in the wall. He was a labor-orator and a good one. Did you ever hear a sailor box the compass? Well, that's the way my principal used to rattle off the jargon of the "dismal science." The pathetic way in which he would explain the "iron law of wages," used to make us all so thirsty from shedding tears, that we had to call for beer. One day we had this dialogue:

"Jem," I said, "what is the iron law of wages?"

"O, its the law which allows a working man just wages enough to purchase the necessaries of life, and keep his muscles in working order."

"Does it cost any more to keep your muscles in working order than mine?"

"No."

"Then how comes it that you get three dollars a day, and I only get a dollar and a quarter?"

"Well, of course, you know, skilled labor is more valuable than unskilled labor in the market."

"Then the value of the article in the market has something to do with the price of it?"

"Certainly."

"And there is no iron law?"

"Yes, there is; for the lowest forms of labor, but not for the higher."

"This," I said, "amounts to a confession that there is no "iron law of wages."

Mr. Levi hopes and expects too much from the land scheme of Henry George. That scheme was lifted into popularity by the eloquence of its advocate as much as by its own merits, and in spite of its mistakes. The moral defect of it is that it makes taxation a principle. It elevates taxes to the rank of blessings. Taxes always deprive society of some comforts; they never can increase its wealth, any more than levying measles upon a special few can increase the health of all. The paradox is visible in Mr. Levi's proposal to abolish poverty "by abolishing all taxation upon the products of labor, and putting it upon land values, taxing them to the last penny." What are land values but the "products of labor." And why confiscate land values "to the last penny?" The only revenue that any government can obtain by taxing land values must come from the values which are the product of labor. The speculative land value of a vacant lot, the anticipated profits of an uncultivated "quarter section," will yield nothing to the tax-gatherer, if assessed to the "last penny" of its prospective worth. In this case the land and the lot will simply be forfeited by the owner to the State, and if conferred upon a new owner they will not yield the first penny in taxes or in profits until they have been made productive by the magic touch of labor. There is much in Mr. George's land scheme that appears to me to be correct, and some of it I advocated in a crude way before Mr. George was known as an author. I think there is a good deal of social relief in the principle of the single tax on land, as being the least impediment to labor; but I do not see how that relief can ever be greater than the sum total of the taxes required for the strict necessities of government. Mr. George is not to be held responsible for the views of his disciples, but many of them believe that under his plan every man who owns lands and lots is to be fined for the offense "to the last penny" of their value.

The personal questions addressed to me in Mr. Levi's last paragraph must be answered. *First.* "Does Wheelbarrow go down below the surface and wrestle with evil in the place of its origin?" To that I answer, yes; as well as I can; but I see a thousand origins of evil, and to the best of my ability I wrestle with them all. I give such help as I can to every reformer, and to every reform. I complain that progress is retarded because reformers will not assist each other. "A single tax on land is the only way to relieve poverty," says one. "Wrong," says another, "State Socialism is the only cure for poverty." "Both wrong," says a third, "Money reform is the one thing needful." "All wrong," says a fourth, "Prohibition of the liquor traffic will remove all poverty," and so on, until the relief of individual misery is looked upon as very unprofessional in a wholesale reformer. Whenever I see anything in any man's plan that I think will remove evil either by wholesale or by retail, I am his disciple.

Second. "Does Wheelbarrow intend to give labor back the right to the use of the earth?" To that I answer, yes; and when labor uses the earth, I would not tax its product *as a punishment* for using it.

Respectfully,

WHEELBARROW.

THE LOST MANUSCRIPT.*

BY GUSTAV FREYTAG.

CHAPTER XXIII—Continued.

Now Mrs. Knips (who dwelt opposite to the actress) came running in to Madame Hummel one day with the linen still damp, and told her that on the previous evening a great basket of champagne had been taken to the actress's house, and that in the night the loud singing of a dissolute company had been heard over the whole street, and that young Doctor Hahn had been among them!

On Sunday the comedian had been invited to dinner at Mr. Hummel's, and one of his first anecdotes was concerning a jovial party which had taken place at the actress's. With the malice which is often to be found in fellow-artists towards each other, he added, "She has found a new admirer, the son of your neighbor over the way. Well! the father's money will at least come to the support of art." Mr. Hummel opened his eyes and shook his head, but only said, "So Fritz Hahn too has gone among the actors and become dissipated: he is the last one that I should have suspected of this."

Mrs. Hummel endeavored to bring to mind her recollections of the ball, and found in them a sorrowful confirmation of this, but Laura, who had been sitting very pale and silent, broke forth vehemently to the actor:

"I will not suffer you to speak of the Doctor in such a tone at our table. We are well enough acquainted with him to know that he is in conduct and principles a noble man. He is master of his own actions, and if he likes the lady and visits her at times, a third person has no right to say anything in the matter whatever. It is a malicious calumny to say that he goes there with any dishonorable intentions, and spends money that does not belong to him."

The comedian, through fright, got a crumb of bread in his wind-pipe, and burst out in the most violent fit of coughing that had ever seized him, but the mother, in excuse of their pleasant visitor, replied:

"You have sometimes felt yourself, that the conduct of the Doctor was not quite the thing."

"If I have said anything of the kind in foolish ill temper," cried Laura, "it was an injustice, and I am very sorry for it; I have only the excuse that I never meant it ill-naturedly. But from others I will hear no slanderous talk about our neighbor." She rose from table and left the room. The actor vindicated himself to the mother, but Mr. Hummel grasped his wine-glass and, peering after his daughter, said:

"On a gloomy day she is scarcely to be distinguished from me."

The Doctor was little troubled about his own mis-

*Translation copyrighted.

deeds. He had paid a visit to his partner after the ball, the occasion on which he had been seen at the window. One of his school friends, now second tenor at the theatre, had come and arranged with the actress to have a little picnic on her approaching birthday, and Fritz had been invited to take part in it. It was a merry gathering; and the Doctor had found much entertainment among the light-winged birds of the stage, and had rejoiced with the benevolence of a wise man at the good tact which was visible amidst the easy style of their intercourse. There had also been much intelligent conversation in the course of the evening, and he went home with the impression that even for a person like himself it was good to be for once associated with these lively artists. He had endeavored that same evening, by a stratagem, to ascertain his unknown correspondent. When they were singing songs, and with lively grace reciting comic verses, he had produced the May-bug song and had begun to sing it:

"The May-bug sat on the hedge, brum, brum;
The fly sat beneath him, hum, hum hum."

Some had joined in it; the lady in the mantle did not know the song, however, but only a similar one from an old *rôle*; and when the bass took up the melody from the Doctor, and in the following verses portrayed each of the birds as they entered by gestures and comic changes of the melody, the hostess laughed, and without any embarassment undertook to learn the song, so that the Doctor again became very doubtful, and on returning home remained standing on the threshold and looked significantly at the house of Mr. Hummel. If any one had accurately investigated why, after this May-bug song, the Doctor became noisy and gay like the others, he would perhaps have discovered that the unembarrassed air of the actress had lifted a load from his heart.

But this helped him little with respect to the "brum" and "hum" of the neighbors. All Park Street had latterly accorded to their Fritz Hahn the highest respect; his picture had been placed among the serious men of learning in their albums, whom they daily contemplated and spoke of. Now strange features had appeared in the well-known face, and the street could not bear that one of their children should appear otherwise than he had been wont to do. Therefore there was much whispering and shaking of heads, and this came to the knowledge of Mr. and Mrs. Hahn, and, finally, to the Doctor. He laughed, but he did not feel quite at ease about it.

"Tannhäuser, noble knight and man,
In Venus' wiles thou liest ensnared,
While I, a wicked Pope Urban,
To cause you shame and sorrow dared."

Thus did Laura lament in her room, but she concealed her heavy sorrow, and did not speak a word concerning the danger of the Doctor, even to Ilse; and when the latter once slightly alluded to the new intimacy of their friend, Laura broke the thread of her embroidery, and said, while the blood rushed to her heart:

"Why should not the Doctor visit there? He is a young man for whom it is good to see different people; he stays too much in his room and with his parents. If I had been a man like him, I should long ago have tied up my bundle and gone out into the world, for our narrow field of active life weakens the energies and dwarfs the mind."

At the tea-table one of the company present turned the conversation on the actress, and shrugged his shoulders over her free manners. Laura felt what must be the Doctor's embarrassment; there sat poor Fritz, obliged to listen to the derogatory criticisms—his intimate acquaintances were silent, and looked significantly at him; his position was terrible, for every fool made use of the lady's unprotected position to show himself a Cato.

"I wonder," she said, "that gentlemen should so severely criticise the little freaks of an actress. A lady of that profession should be treated with great consideration, for she is deprived of all the protection and all the pleasure which we have in our families. I am convinced that she is a worthy and sensitive girl."

The Doctor looked thankfully at her and confirmed her opinion. He did not observe it, but it had happened as in his fairy-tale; Laura had bent down to his feet and picked up the pocket-handkerchief.

But she had still more to bear. The month of March began his theatrical pranks in the world; first from his grey clouds he had cast a veil of snow over the landscape; icicles hung from the roofs and white crystals from the trees, and the wild storm howled all around. Suddenly all was transformed. A mild south wind blew, the buds of the trees swelled, and the fresh green made its appearance in the meadow; the children ran about in the woods and carried home large bunches of spring flowers, and people, rejoicing in the change, passed in unceasing pilgrimage through the Park Street out into the sunshine.

Even Mr. Hummel felt the presage of spring. He gave expression to this annually by mixing the colors for his boat, and taking a pleasure walk on a well-chosen afternoon with his wife and daughter to a distant coffee-garden. This festive journey was but an indifferent pleasure for Laura, for Mr. Hummel walked with sturdy step in front of the ladies; he secretly rejoiced in the renewal of old nature, and only occasionally favored his ladies with a remark over his shoulder when he was annoyed at a change in the vegetation. But Laura knew that he father thought much of this March pleasure, and this year, too, she

went with her mother behind him to a solitary village, where Mr. Hummel smoked his pipe, fed the hens, scolded the waiter, and talked with the landlord about the crops and gave the sun an opportunity of rejoicing in the healthy appearance of his old friend, Mr. Hummel. Mr. Hummel, who was usually by no means averse to society, loved now to be alone with nature, and hated the place of resort of the citizens in the country, where the aroma of new cakes and fritters destroyed the perfume of nature.

When he entered the coffee-garden with his ladies, he saw with dissatisfaction that other guests were already there. He threw an indignant glance on the gay society which had taken possession of his usual place, and noticed among them the young actress, as well as other members of the theatre, and with them the son of his adversary. Then he turned to his daughter and said, blinking his eyes:

"To-day you will be well satisfied; here you have, besides the enjoyments of nature, those of art."

It was a terribly hard trial to which Laura's courage was subjected; but she raised her head proudly, and passed with her parents to another corner of the garden. There she placed herself with her back to the strangers. Nevertheless, she learnt more of their proceedings than was good for her composure. She heard the sounds of laughter, and the merry hum of the May-bug party; the less she saw of them the more painful was the noise, and every sound was audible in the deep stillness, and her mother's ears and eyes also were intent on the other party. After a time the loud conversation of the artists ceased, and she heard her name spoken in low terms. Immediately afterwards the gravel crunched behind her, and she felt that the Doctor was behind her.

He approached the table, greeted the father silently, made some friendly remarks to the mother about the weather, and was just on the point of turning to Laura with a forced composure that did not escape her, when Mr. Hummel, who had till then silently borne the intrusion of the enemy, took his pipe from his mouth, and began, with gentle voice:

"Is what I hear of you possible, Doctor?—that you wish to change your mode of life?"

Laura plunged her parasol vehemently into the gravel.

"I know nothing of it," replied the Doctor, coolly.

"It is reported," continued Mr. Hummel, "that you intend to say farewell to your books and become a professional actor. If this should be the case, I beg of you to think kindly of my little business. I have every kind of artistic head-gear: for lovers fine beaver, with galoon for lackeys, and if ever you act the punchinello, a white felt hat. But you would rather be called clown, perhaps. That is now the fashionable *rôle*; buffoons are out of style; one shall address you as Sir Clown."

"I have no intention of going on the stage, replied the Doctor; "but if ever the idea should occur to me, I would not come to you for the artistic work of your manufactory, but for instruction in what you consider a good manners. I should then at least know what, in my profession, was *not* befitting men of breeding."

He bowed to the ladies, and went away.

"Always Humboldt," said Mr. Hummel, looking after him.

Laura did not move, but her dark eyebrows were knit so threateningly that Mr. Hummel could not help perceiving it.

"I am quite of your opinion," he said, pleasantly, to his daughter. "It is a great pity that he is spoilt by belonging to these straw-hat people, but now there is no hope for him."

He then took a bit of cake and offered it to a little poodle that was sitting on its hind legs, begging and moving its paws.

"Billy!" cried a lady's voice through the garden.

The dog Billy, however, did not attend, but continued to show his devotion to Mr. Hummel, who, having a greater tenderness for dogs than for men, was feeding him.

The actress came up hastily.

"I beg of you not to give the naughty animal any cake,—there are almonds in it," said the actress, pushing the dog away.

"A pretty dog," replied Mr. Hummel, sitting down.

"If you only knew how clever he was," said the lady; "he knows all kinds of tricks. Show the gentleman what you have learnt, Billy."

She held her parasol out: Billy sprang lightly over it, and bounded into the lap of Mr. Hummel, where he wagged his tail and attempted to lick the friendly gentleman's face.

"He wants to kiss you," said the actress. "You should be proud of that, for he does not do it to every one."

"It is not every one who would like it," replied Mr. Hummel, stroking the little fellow.

"Do not be troublesome to the gentleman, Billy," said the lady, reprovingly.

Mr. Hummel arose and presented the dog to her, which would not desist from his attempts to kiss and lick the face of the worthy citizen.

"He is a simple-hearted creature," said Mr. Hummel, "and is the same color as my dog Spitehahn."

A comparison not at all flattering to the poodle, yet plainly showing that Mr. Hummel was favorably impressed with its mistress.

(To be continued.)

BOOK REVIEWS.

The *Art Amateur* for September seems to partake a little of the languor of the dog days, for there is no article of great importance in it. "My Note Book" refers to a portrait of Lincoln by one Travis, which it has been suggested that Congress should purchase at the extravagant price of fifteen thousand dollars. It has also various stories of picture sales and other gossip about art.

The ingenuity shown in the manufacture of antiquities is well described. It is a pity that so much skill should not be exercised in legitimate work and sold under its true name. A few words on the "Care of Paintings," may be very useful to those who have them in charge. A new application of the spectroscopic process is in determining the genuineness of gems, as no imitation of their color will give the same lines as the original stone.

A long article gives an account of a French seashore town called Etrelat, and is finely illustrated with many sketches by Walter Satterlee.

Many will be interested in the decided and original views of Benjamin Constant, the great French painter, who is shortly expected here to paint a few portraits. A great part of the number is devoted to the *technique* of Decorative Art, and is very suggestive to amateurs working in this direction.

The colored plate represents two birds of Paradise, but hardly succeeds in giving the wonderful subtle beauty of the plumage of these almost fabulous birds. The designs are varied and interesting. The *Art Amateur* has become almost a monthly necessity to those engaged in fancy work. E. D. C.

GRUNDRISS DER CHRISTLICHEN GLAUBENS- UND SITTENLEHRE, als Compendium für Studirende und als Leitfaden für den Unterricht an höheren Schulen; by *Otto Pfleiderer*. Berlin: 1888. Georg Reimer.

Prof. Pfleiderer's book, "The Rudiments of Christian Dogmatics and Ethics," is now in its fourth edition,—a substantial tribute to the merits and excellencies of a work upon a subject so prolific of rigid treatment. We might add that its success must indicate more than usual merit from the fact of its appearance in a country where Protestant theology has long since attained a scientific basis, and where cool and impartial investigation of ecclesiastical antecedents has not brought with it the odium of heterodoxy or the curse of miscreancy. In Germany, practical and scientific theology have been developed in independent directions. The ministers of practical faith have worked *pro salute animarum;* the ministers of scientific theology have labored *pro salute veritatis.* In England the process has been different. Anglican theology has invariably been fashioned by the necessities of Anglican faith. Eclesiastical history, and the criticism of creed in the light of contemporaneous secular tendencies, has never been allowed its proper place in the curriculum of the Anglican theological education. Gibbon was said to be the only ecclesiastical historian of eminence in England—and he an atheist! Cardinal Newman imputes this fault to a well-founded reluctance to investigating the grounds on which the title of Protestantism is founded. "Protestantism," says he, "if anything, is not historical. This is shown in the determination already referred to, of dispensing with historical Christianity and of forming a Christianity from the Bible alone. German Protestantism, on the other hand, has been of a bolder character; it has calmly faced and carefully surveyed the Christianity of eighteen hundred years, and it frankly avows that it is a mere religion of man and the accident of a period. It considers it a syncretism of various opinions springing up in time and place, and forming such combinations one with another as their respective characters admitted."

Let us note briefly in how far Prof. Pfleiderer has conformed to this historico-scientific method. "Dogmatics," he says, "is first of all a positive-historical branch of instruction. Since the creed of Christianity is the outcome of the historical rise and growth of the Christian congregation, it follows that it cannot be derived from the simple self-consciousness of the individual, nor from subjective reason, nor from a subjective sense of piety." But its office is, further, apologetic and critical, whereupon the author remarks: "The subject-matter for apologetic treatment can only be the *religious* content of dogma, as serving to determine the devotional character of the congregation, and not the scholastic and formal dress in which dogmatic ideas are clothed; for the latter are based upon the conceptions of the antique world and upon philosophical theories of past ages, and regarded from the altered ways of thinking obtaining at present, they tend more to veil than to express the religious truth of Christianity." Prof. Pfleiderer says that "in so far as dogmatics conforms in its processes to the established methods of scientific investigation and of rational thought, and in so far as its object is to ensure logical consistency within its own domain and to bring its postulates into consonance with universal knowledge, in so far does it acquire the title and character of a pure science. But in so far as it loses sight of the interests of universal knowledge and aims merely at satisfying the practical religious needs of the Christian congregation, in so far does it relinquish all claim to the correctness and logical necessity of its conclusions, and must be ranked among the practical or technical methods of scientific procedure." Thus, the divisions of the work naturally fall into two parts: the development and analysis of Christian doctrine and of Christian principles as actually evolved in time and place, without the interspersion of ideas suggested by "the subjective sense of piety"; and the history and results of the adaptation of these ideas to the practical needs of the Christian body corporate. As to the latter it is unnecessary for us to say a word; with the exception of an occasional fling at Catholicism, which is pardonable from the evangelical standpoint, the exposition is fair and conformable to facts. But the former may lay claim to unusual excellence; it is a paragon of objective treatment. It is concise and logical; it is comprehensive and flexible. It does not moralize, it is not disputatious, nor discursive. A Mahometan might read it without any fear whatsoever of a corruption of faith. It will suffice to remark that it conforms in every way to the criteria of scientific investigation above quoted from Dr. Pfleiderer, and may be heartily recommended to those who would acquire an accurate knowledge of Christian doctrine, without being obliged to break their way through the underbrush of controversial debate and sermonizing comment. μκρκ.

NOTES.

We learn with great sorrow of the sad death of Richard A. Proctor.

Prof. E. D. Cope will discuss "The Relation of the Sexes to Government" in the *Popular Science Monthly* for October.

We call attention to the notice in this number by Mr. George Willis Cooke, who is recommended by names as prominent as Mrs. Julia Ward Howe, Edwin D. Mead, etc. Mr. Cooke is the author of "Poets and Problems" and other works on modern literature.

A circular received from Mr. George Stearns informs us that a new work of his "The Pericosmic Theory" is ready for press and will be printed as soon as a goodly list of subscribers warrant the publisher against contingent loss on his part of the enterprise. The first chapter of Mr. Stearns' work has been published in THE OPEN COURT, No. 20, under the title, "The Mystery of Gravity." Other parts in chapters are, so far as can be judged from the prospectus, a very interesting attempt at solving the problem.